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| | | | EXAMINER LU, ZHIYU | |
| | | | ART UNIT 2618 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/519,172

Applicant(s)

BLOCK ET AL.

Examiner

Zhiyu Lu

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,8-11,13-16 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,8-11,13-16 and 18-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/18/2007 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 10 is objected to because of the following informalities:

In claim 1, line 1, replace "Circuitry" with --A circuitry--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 8, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073).

Regarding claim 1, Heinonen teaches a circuit arrangement for use with a mobile telephone, the circuit arrangement comprising:

a transmitting circuit comprising:

a first signal line that corresponds to a first frequency band (DCS, TXC1 of Fig. 3);

a second signal line that corresponds to a second frequency band (GSM, TXC2 of Fig. 3);

a switch (380 of Fig. 3) that connects an antenna to one of the first and second signal lines;

a first amplifier (370 of Fig. 3) in series with the first signal line;

a second amplifier (390 of Fig. 3) in series with the second signal line;

a first band-pass filter (372 of Fig. 3) between the first amplifier and the switch, the first band-pass filter having a frequency range that corresponds to the first frequency band (column 6 lines 1-12); and

a second band-pass filter (392 of Fig. 3) between the second amplifier and the switch, the second band-pass filter having a frequency range that corresponds to the second frequency band (column 6 lines 13-28).

But, Heinonen does not expressly disclose a multi-layer ceramic module having integrated therein passive components for use in matching impedances between the switch and the first and second band-pass filters.

Hayakawa teaches using a multi-layer ceramic module having integrated therein passive components for use in matching impedances between the switch and the first and second band-pass filters (abstract, paragraphs 0016-0018, 0043, Figs. 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate integrated passive components for use in matching impedance between switch and filters taught by Hayakawa into the circuit arrangement of Heinonen, in order to make stability to RF property with minimizing reflections.

Regarding claim 4, Heinonen and Hayakawa teach the limitation of claim 1.

Hayakawa teaches further comprising sheet metal on which the first and second band-pass filters are mounted (Figs. 1-2, where a multilayer package provides sheet metal as common ground plane for filters to be mounted on).

Regarding claim 8, Heinonen and Hayakawa teach the limitation of claim 1.

Heinonen teaches the first and second band-pass filters have attenuation curves that can be brought into approximate alignment by shifting along a frequency axis (inherent since both filters are for transmitting portion with respect to different frequencies).

Regarding claim 19, Heinonen and Hayakawa teach the limitation of claim 1.

Hayakawa teaches wherein the switch is integrated in the multi-layer ceramic module (Figs. 1-2, paragraph 0043).

Regarding claim 22, Heinonen and Hayakawa teach the limitation of claim 1.

Heinonen teaches a receiving circuit comprising: a third signal line that corresponds to a third frequency band (RXC1 or RXC2 of Fig. 3); and a third band-pass filter in series with the third signal line (column 7 lines 46-58).

5. Claims 2 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073) and Young (US Patent#6643522).

Regarding claim 2, Heinonen and Hayakawa teach the limitation of claim 1.

But, Heinonen and Hayakawa do not expressly disclose further comprising an isolator between the transmitting circuit and the receiving circuit.

Young teaches an isolator between the transmitting circuit and the receiving circuit (52 of Fig. 5, column 5 line 65 to column 6 line 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate isolator between transmitting circuit and receiving circuit taught by Young into the modified circuit arrangement of Heinonen and Hayakawa, in order prevent signal interference between transmitting circuit and receiving circuit.

Regarding claim 24, Heinonen, Hayakawa, and Young teach the limitation of claim 2.

Heinonen, Hayakawa, and Young teach wherein the isolator comprises part of the multi-layer ceramic module (Hayakawa teaches switch being integrated as part of multi-layer ceramic module, Figs. 1-2 and paragraph 0043, which would have been obvious to recognize that the isolator as a switch would have been part of the multi-layer ceramic module).

Regarding claim 25, Heinonen, Hayakawa, and Young teach the limitation of claim 2.

Young teach wherein the isolator comprise a circulator (52 of Fig. 5).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073) and Weissman et al. (US2003/0050018).

Regarding claim 9, Heinonen and Hayakawa teach the limitation of claim 1.

But, Heinonen and Hayakawa do not expressly disclose the first and second amplifiers have amplifications of less than 26dB.

Weissman et al. teach the first and second amplifiers have amplifications of less than 26dB (paragraph 0020).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate amplifiers having amplifications of less than 26 dB taught by Weissman et al. into the modified circuit arrangement of Heinonen and Hayakawa, in order to be suitable for application.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073) and Hageltorn et al. (US Patent#6006117).

Regarding claim 20, Heinonen and Hayakawa teach the limitation of claim 1.

But, Heinonen and Hayakawa do not expressly disclose wherein the passive components comprise parts of a pi-filter.

Hageltorn et al. teach utilizing a pi-filter for impedance matching between an input impedance and an output impedance in a telecommunication device (column 5 lines 41-62, where key function of impedance matching filters is well-known to a man skilled in the art), which would have been obvious to one of ordinary skill in the art to recognize that the passive components of Hayakawa can be replaced with a pi-filter because they both perform impedance matching function equally well.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the passive components of Heinonen and Hayakawa into a pi-filter for impedance matching taught by Hageltorn et al. by design preference.

8. Claims 15, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073) and Newell et al. (US Patent#5815804).

Regarding claims 15, 18 and 21, Heinonen and Hayakawa teach the limitations of claims 22 and 1.

But, Heinonen and Hayakawa do not expressly disclose wherein the first and second band-pass filters comprise surface acoustic wave filters.

Newell et al. teach using surface wave filter in transceiver (column 5 lines 46-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using surface wave filter taught by Newell et al. into the circuit arrangement of Heinonen and Hayakawa, in order to provide advantages in performance, cost, and size in manufacture of integrated circuit.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073) and Toda et al. (US Patent#6751471). Regarding claim 23, Heinonen and Hayakawa teach the limitation of claim 22.

But, Heinonen and Hayakawa do not expressly disclose wherein the third signal line comprises an only signal transmission line in the receiving circuit for passing signals from an external device.

Toda et al. teach a receiving circuit comprising: a third signal line that corresponds to a third frequency band; and a third band-pass filter in series with the third signal line (401 of Fig. 14); wherein the third signal line comprises an only signal transmission line in the receiving circuit for passing signals from an external device (receiving part of Fig. 14).

Note that transmitting circuit of Toda et al. was a combination of two transmitting lines (Fig. 3), which would have been obvious to one ordinary skill in the art to do the combine/separate modification on the transmitting circuit in term of application.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the circuit arrangement of Heinonen and Hayakawa into having a single receiving line for dual frequency band reception taught by Toda et al., in order to reduce circuit size and cost.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073), Toda et al. (US Patent#6751471) and Newell et al. (US Patent#5815804).

Regarding claim 16, Heinonen, Hayakawa, and Toda et al. teach the limitation of claim 23.

But, Heinonen, Hayakawa, and Toda et al. do not expressly disclose wherein the first, second and third band-pass filters comprise surface acoustic wave filters.

Newell et al. teach using surface wave filter in transceiver (column 5 lines 46-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using surface wave filter taught by Newell et al. into the circuit arrangement of Heinonen, Hayakawa, and Toda et al., in order to provide advantages in performance, cost, and size in manufacture of integrated circuit.

11. Claims 10 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073), Newell et al. (US Patent#5815804), and Toda et al. (US Patent6751471).

Regarding claim 10, Heinonen teaches circuitry comprising:

a transmitting portion (TXC1 and TXC2 of Fig. 3); and

a receiving portion (RXC1 and RXC2 of Fig. 3);

wherein the transmitting portion comprise plural signal lines, each of the plural signal lines for transmitting a signal in a different frequency band (TXC1 and TXC2 of Fig. 3, column 6 lines 1-12), each of the plural signal lines being in series with a switch (380 of Fig. 3), each of the plural signal lines comprising, in order, the switch for connecting an antenna (302 of Fig. 3) to one of the plural signal line, the band-pass filter (372 or 392 of Fig. 3), an amplifier (370 or 390 of Fig. 3), and a filter (368 or 388 of Fig. 3);

wherein the receiving portion comprises a signal line for receiving a signal from an external device (RXC1 or RXC2 of Fig. 3), the signal line comprising a passive component

(since no further detail is claimed, passive component is inherent as resistor, capacitor, or inductor in switch, filter, amplifier, etc.) and a band-pass filter (306 or 326 of Fig. 3).

But, Heinonen does not expressly disclose a passive component for use in matching impedance between the switch and a band-pass filter, wherein the transmitting portion comprises a multi-layer ceramic module having the passive component integrated therein; the filter being a surface acoustic wave filter; and having a single receiving line.

Hayakawa teaches using a multi-layer ceramic module having integrated therein passive components for use in matching impedances between the switch and the first and second band-pass filters (abstract, paragraphs 0016-0018, 0043, Figs. 1-3).

Newell et al. teach using surface wave filter in transceiver (column 5 lines 46-56).

Toda et al. teach a receiving circuit comprising: a third signal line that corresponds to a third frequency band; and a third band-pass filter in series with the third signal line (401 of Fig. 14); wherein the third signal line comprises an only signal transmission line in the receiving circuit for passing signals from an external device (receiving part of Fig. 14).

Note that transmitting circuit of Toda et al. was a combination of two transmitting lines (Fig. 3), which would have been obvious to one ordinary skill in the art to do the combine/separate modification on the transmitting circuit in term of application.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the receiving portion of Heinonen into having a single receiving line for dual band reception taught by Toda et al. and incorporate using integrated passive components for impedance matching taught by Hayakawa, using surface wave filters taught by Newell et al.

therein, in order to provide stability to RF property with minimizing cost and size in manufacture of integrated transceiver circuit.

Regarding claim 13, Heinonen, Hayakawa, Newell et al., and Toda et al. teach the limitation of claim 10.

Hayakawa teaches wherein the switch, and passive components of the transmitting portion and the receiving portion comprise part of the multi-layer ceramic module (Figs. 1-2, paragraph 0043).

Regarding claim 14, Heinonen, Hayakawa, Newell et al., and Toda et al. teach the limitation of claim 10.

Newell et al. teach wherein the switch comprise at least one of a field effect transistor, diodes, and mechanical components (column 4 lines 46-50).

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hayakawa (JP2001-292073), Newell et al. (US Patent#5815804), Toda et al. (US Patent#6751471), and Young (US Patent#6643522).

Regarding claim 11, Heinonen, Hayakawa, Newell et al., and Toda et al. teach the limitation of claim 10.

But, Heinonen, Hayakawa, Newell et al., and Toda et al. do not expressly disclose further comprising an isolator between the transmitting portion and the receiving portion.

Young teaches an isolator between the transmitting circuit and the receiving circuit (52 of Fig. 5, column 5 line 65 to column 6 line 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate isolator between transmitting circuit and receiving circuit taught by Young into the modified circuit arrangement of Heinonen, Hayakawa, Newell et al., and Toda et al., in order prevent signal interference between transmitting circuit and receiving circuit.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhiyu Lu whose telephone number is (571) 272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Zhiyu Lu
December 7, 2007


NAY MAUNG
SUPERVISORY PATENT EXAMINER